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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/769,717	01/29/2004	Douglas Werner	COOL-02100	8804

28960 7590 02/23/2005

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EXAMINER	
WALBERG, TERESA J	

ART UNIT	PAPER NUMBER
3742	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/769,717	WERNER ET AL.	
	Examiner	Art Unit	
	Teresa J. Walberg	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-66* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-66* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/19/04,3/15//04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. It is noted that in claim 52, at line 12, "loss" should be changed to "lose" to correct a typographical error.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, 6, 13-17, 19, 21, 28, 29, 31, 33, 40, 41, 43, 45, 52, 53, 55, 57, and 64-66 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamilton et al (5,763,951).

Hamilton et al disclose (see Figs. 2 and 3) a closed loop fluid pumping system to control a temperature of an electronic device (100), the system including at least one pump (114), at least one heat exchanger (108) coupled to the electronic device (100) and configured to pass a fluid therethrough, wherein the fluid performs thermal exchange with the electronic device (100), at least one heat rejecter (110), and fluid interconnect components (the channels extending between the components) to couple the at least one pump (114), the at least one heat exchanger and the at least one heat rejecter, wherein the closed loop fluid pumping system loses up to a predetermined maximum amount of the fluid over a desired amount of operating time. See col. 9, lines 6-7, which states that the entire cooling system is sealed. The system thus has substantially zero fluid loss.

With respect to claims 2, 17, 29, 41, and 52, Hamilton et al disclose a single phase fluid (col. 7, last line).

With respect to claims 4, 19, 31, 43, and 55, the pump would necessarily have a desired permeability, since it is a magnetic pump (col. 4, line 53).

With respect to claims 6, 21, 33, 45, and 57, the interconnect components would necessarily have a desired permeability, since Hamilton et al state that the system is sealed (col. 9, lines 6-7).

With respect to claims 13-16, 28, 40, and 64-66, the system of Hamilton would necessarily lose less than the stated amount of fluid, since col. 9, lines 6-7, states that the entire cooling system is sealed. The system thus has substantially zero fluid loss.

4. Claims 1-8, 13-23, 28-35, 40-47, 52-59, and 64-66 are rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al (2004/0052049).

Wu et al disclose (see Fig. 1) a closed loop fluid pumping system to control a temperature of an electronic device (Fig. 1), the system including at least one pump (110), at least one heat exchanger (104) coupled to the electronic device (105) and configured to pass a fluid therethrough, wherein the fluid performs thermal exchange with the electronic device (105), at least one heat rejecter (114), and fluid interconnect components (the channels extending between the components) to couple the at least one pump (110), the at least one heat exchanger (104) and the at least one heat rejecter (114), wherein the closed loop fluid pumping system loses up to a predetermined maximum amount of the

fluid over a desired amount of operating time. See page 2, para. 0022, which states that the components of the cooling system are sealed together by welding. The system thus has substantially zero fluid loss.

With respect to claims 2, 3, 17, 18, 29, 30, 41, 42, and 52-54, Wu et al disclose a single phase or two phase fluid (page 3, 1st column, lines 17-24).

With respect to claims 4, 19, 31, 43, and 55, the pump would necessarily have a desired permeability, since it is a magnetically linked pump (page 3, lines 28-32).

With respect to claims 6, 7, 21, 22, 33, 34, 45, 46, 57, and 58, the interconnect components would necessarily have a desired permeability, since they are disclosed as being copper (see page 3, col. 1, lines 58-59) and since Wu et al state that the system is sealed by welding (page 2, last sentence in paragraph 0022).

With respect to claims 13-16, 28, 40, and 64-66, the system of Wu et al would necessarily lose less than the stated amount of fluid, since page 1, paragraph 0011, states that the entire cooling system is sealed and is "leakage-free". The system thus has substantially zero fluid loss.

With respect to claims 5, 20, 32, 44, and 56, the pump impeller is disclosed as being made of aluminum, which is a metal. See page 3, col. 1, line 38.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 9, 11, 12, 24, 26, 27, 36, 38, 39, 48, 50, 51, 60, 62, and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al (2004/0052049) in view of Lopes (5,043,797).

Wu et al, as discussed above, disclose the claimed structure with the exception of a sealing collar.

Lopes discloses the use of sealing collars for interconnecting components of the heat exchange system. See Fig. 3.

It would have been obvious in view of Lopes to use a sealing collar with the interconnections of Wu et al for easier interconnection of the parts.

7. Claims 10, 25, 37, 49, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al (2004/0052049) in view of Lopes (5,043,797) as applied to claims above and further in view of Daikoku et al (6,351,384).

Wu et al and Lopes, as discussed above, disclose the claimed structure with the exception of the coefficients of expansion being matched.

Daikoku et al teach matching expansion coefficients in parts that are to be joined in a heat transfer apparatus. See col. 4, lines 6-7.

It would have been obvious in view of Daikoku et al to match the coefficients of expansion in the interconnections of Wu et al in view of Lopes to prevent damage to the connections that could be caused by differences in rates of expansion.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tomioka et al, Gwin et al, Moss et al, and Tomioka et al are cited as showing liquid cooling systems.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa J. Walberg whose telephone number is 571-272-4790. The examiner can normally be reached on M-F 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Teresa J. Walberg
Primary Examiner
Art Unit 3742

tjw